Method of Substitution Review

1a. Perform the substitution $u = x^4 + 2x - 1$ for the integral $\int_{-1}^{0} \frac{2x^3 + 1}{x^4 + 2x - 1} \, dx$.

Be sure to change the integration limits. Write down the resulting integral below:

$$\int \frac{\overline{}}{\underline{}} \quad \underline{} \quad du$$

1b. Perform the $u-$integral you obtained in (a) to evaluate $\int_{-1}^{0} \frac{2x^3 + 1}{x^4 + 2x - 1} \, dx$.

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2. Perform the integrals below.

2a. $\displaystyle\int \frac{6}{(3x-2)^5}\,dx$

2b. $\displaystyle\int \frac{6x}{(3x-2)^5}\,dx$

3. Find the exact values of the integrals below.

3a. $\displaystyle\int_1^e \frac{\ln x}{x}\,dx$

3b. $\displaystyle\int_{\pi/6}^{\pi/4} \sin^3 x \cos x \,dx$